

*Claim Listing*

The following listing of the claims, if entered, replaces all prior versions of the claims.

1. (Currently Amended) A method comprising:  
 receiving at least one packet; and  
 disposing of the received at least one packet in response to a walk of a Hash Table,  
wherein  
the Hash Table is balanced,  
the Hash Table is configured to store Binary Comparison Trees, and  
the Hash Table is configured to encode an Access Control List ~~Balanced Hash~~  
~~Table of Access Control List Binary Comparison Trees, the Table~~  
~~encoding an Access Control List.~~
  
2. (Currently Amended) The method of Claim 1, wherein said disposing of the  
 received at least one packet in response to a walk of the a ~~Balanced Hash Table of Access~~  
~~Control List Binary Comparison Trees, the Table encoding an Access Control List~~ further  
 includes:  
 constructing a hash table index value from one or more bit positions, within the received  
 at least one packet, pointed at by one or more pointers of a Hash-Table-Balancing  
 Bit Selection Vector; and  
 walking a binary comparison tree associated with the constructed hash table index value.
  
3. (Currently Amended) The method of Claim 1, further comprising:  
 converting the Access Control List to the ~~Balanced Hash Table of Access Control List~~  
~~Binary Comparison Trees, the Table encoding the Access Control List.~~
  
4. (Currently Amended) The method of Claim 3, wherein said converting the Access  
 Control List to the ~~Balanced Hash Table of Access Control List Binary Comparison Trees, the~~  
~~Table encoding the Access Control List~~ further includes:  
 creating a binary comparison tree for at least one Access Control List rule in the Access  
 Control List.

5. (Original) The method of Claim 4, wherein said creating a binary comparison tree for at least one Access Control List rule further includes:

creating at least one node, having at least one miss branch and at least one match branch,  
for at least one packet header field utilized by the at least one Access Control List Rule in the Access Control List.

6. (Currently Amended) The method of Claim 3, wherein said converting the Access Control List to the ~~Balanced Hash Table of Access Control List Binary Comparison Trees, the Table encoding the Access Control List~~ further includes:

inserting at least a part of a binary comparison tree constructed for at least one Access Control List rule into a hash table entry pointed at by a hash table index.

7. (Original) The method of Claim 6, wherein said inserting at least a part of a binary comparison tree constructed for at least one Access Control List rule into a hash table entry pointed at by a hash table index further includes:

generating a hash table index value for the at least one Access Control List rule; and  
inserting the at least a part of a binary comparison tree constructed for at least one Access Control List rule into a hash table entry pointed at by a hash table index which is equal to the generated hash table index value.

8. (Original) The method of Claim 7, wherein said inserting the at least a part of a binary comparison tree constructed for at least one Access Control List rule into a hash table entry pointed at by a hash table index which is equal to the generated hash table index value further includes:

inserting, in its entirety, the binary comparison tree constructed for the at least one Access Control List rule into the hash table entry pointed at by the hash table index in response to a determination that no pre-existing binary comparison tree is resident within the hash table entry.

9. (Original) The method of Claim 7, wherein said inserting the at least a part of a binary comparison tree constructed for at least one Access Control List rule into a hash table

entry pointed at by a hash table index which is equal to the generated hash table index value further includes:

inserting at least one node of the binary comparison tree constructed for the at least one Access Control List rule into the hash table entry pointed at by the hash table index in response to a determination that a pre-existing binary comparison tree is resident within the hash table entry.

10. (Original) The method of Claim 7, wherein said generating a hash table index value for the at least one Access Control List rule further includes:

constructing the hash table index value from the contents of one or more packet headers utilized by the at least one Access Control List rule in the Access Control List.

11. (Original) The method of Claim 10, wherein said constructing the hash table index value from the contents of one or more packet headers utilized by the at least one Access Control List rule in the Access Control List further includes:

constructing the hash table index value from the contents of the one or more packet header bit positions pointed at by one or more pointers of a Hash-Table-Balancing Bit Selection Vector.

12. (Original) The method of Claim 11, wherein said constructing the hash table index value from the contents of the one or more packet header bit positions pointed at by one or more pointers of a Hash-Table-Balancing Bit Selection Vector further includes:

constructing the Hash-Table-Balancing Bit Selection Vector.

13. (Original) The method of Claim 12, wherein said constructing the Hash-Table-Balancing Bit Selection Vector further includes:

defining one or more pointers of the Hash-Table-Balancing Bit Selection Vector to point to one or more bit positions in one or more packet header fields utilized by one or more rules of the Access Control List.

14. (Original) The method of Claim 13, wherein said defining one or more pointers of the Hash-Table-Balancing Bit Selection Vector to point to one or more bit positions in one or

more packet header fields utilized by one or more rules of the Access Control List further includes:

defining the one or more pointers of the Hash-Table-Balancing Bit Selection Vector to point to one or more bit positions, which appear relatively most frequently, within the one or more packet header fields utilized by the one or more Rules of the Access Control List.

15. (Original) The method of Claim 13, wherein said defining one or more pointers of the Hash-Table-Balancing Bit Selection Vector to point to one or more bit positions in one or more packet header fields utilized by one or more rules of the Access Control List further includes:

defining the one or more pointers of the Hash-Table-Balancing Bit Selection Vector to point to one or more bit positions, whose contents have relatively equal variation between logical one and logical zero, within the one or more packet header fields utilized by the one or more Rules of the Access Control List.

16. (Currently Amended) A system comprising:

means for receiving at least one packet; and

means for disposing of the received at least one packet in response to a walk of a Hash Table, wherein

the Hash Table is balanced,

the Hash Table is configured to store Binary Comparison Trees, and

the Hash Table is configured to encode an Access Control List ~~Balanced Hash Table of Access Control List Binary Comparison Trees, the Table encoding an Access Control List.~~

17. (Currently Amended) The system of Claim 16, wherein said means for disposing of the received at least one packet in response to a walk of a ~~Balanced Hash Table of Access Control List Binary Comparison Trees, the Table encoding an Access Control List~~ further includes:

means for constructing a hash table index value from one or more bit positions, within the received at least one packet, pointed at by one or more pointers of a Hash-Table-Balancing Bit Selection Vector; and

means for walking a binary comparison tree associated with the constructed hash table index value.

18. (Currently Amended) The system of Claim 16, further comprising:

means for converting the Access Control List to the ~~Balanced Hash Table of Access Control List Binary Comparison Trees, the Table encoding the Access Control List.~~

19. (Currently Amended) The system of Claim 18, wherein said means for converting the Access Control List to the ~~Balanced Hash Table of Access Control List Binary Comparison Trees, the Table encoding the Access Control List~~ further includes:

means for creating a binary comparison tree for at least one Access Control List rule in the Access Control List.

20. (Original) The system of Claim 19, wherein said means for creating a binary comparison tree for at least one Access Control List rule further includes:

means for creating at least one node, having at least one miss branch and at least one match branch, for at least one packet header field utilized by the at least one Access Control List rule in the Access Control List.

21. (Currently Amended) The system of Claim 18, wherein said means for converting the Access Control List to the ~~Balanced Hash Table of Access Control List Binary Comparison Trees, the Table encoding the Access Control List~~ further includes:

means for inserting at least a part of a binary comparison tree constructed for at least one Access Control List rule into a hash table entry pointed at by a hash table index.

22. (Original) The system of Claim 21, wherein said means for inserting at least a part of a binary comparison tree constructed for at least one Access Control List rule into a hash table entry pointed at by a hash table index further includes:

means for generating a hash table index value for the at least one Access Control List rule; and

means for inserting the at least a part of a binary comparison tree constructed for at least one Access Control List rule into a hash table entry pointed at by a hash table index which is equal to the generated hash table index value.

23. (Original) The system of Claim 22, wherein said means for inserting the at least a part of a binary comparison tree constructed for at least one Access Control List rule into a hash table entry pointed at by a hash table index which is equal to the generated hash table index value further includes:

means for inserting, in its entirety, the binary comparison tree constructed for the at least one Access Control List Rule into the hash table entry pointed at by the hash table index in response to a determination that no pre-existing binary comparison tree is resident within the hash table entry.

24. (Original) The system of Claim 22, wherein said means for inserting the at least a part of a binary comparison tree constructed for at least one Access Control List rule into a hash table entry pointed at by a hash table index which is equal to the generated hash table index value further includes:

means for inserting at least one node of the binary comparison tree constructed for the at least one Access Control List rule into the hash table entry pointed at by the hash table index in response to a determination that a pre-existing binary comparison tree is resident within the hash table entry.

25. (Original) The system of Claim 22, wherein said means for generating a hash table index value for the at least one Access Control List rule further includes:

means for constructing the hash table index value from the contents of one or more packet headers utilized by the at least one Access Control List rule in the Access Control List.

26. (Original) The system of Claim 25, wherein said means for constructing the hash table index value from the contents of one or more packet headers utilized by the at least one Access Control List rule in the Access Control List further includes:

means for constructing the hash table index value from the contents of the one or more packet header bit positions pointed at by one or more pointers of a Hash-Table-Balancing Bit Selection Vector.

27. (Original) The system of Claim 26, wherein said means for constructing the hash table index value from the contents of the one or more packet header bit positions pointed at by one or more pointers of a Hash-Table-Balancing Bit Selection Vector further includes:

means for constructing the Hash-Table-Balancing Bit Selection Vector.

28. (Original) The system of Claim 27, wherein said means for constructing the Hash-Table-Balancing Bit Selection Vector further includes:

means for defining one or more pointers of the Hash-Table-Balancing Bit Selection Vector to point to one or more bit positions in one or more packet header fields utilized by one or more rules of the Access Control List.

29. (Original) The system of Claim 28, wherein said means for defining one or more pointers of the Hash-Table-Balancing Bit Selection Vector to point to one or more bit positions in one or more packet header fields utilized by one or more rules of the Access Control List further includes:

means for defining the one or more pointers of the Hash-Table-Balancing Bit Selection Vector to point to one or more bit positions, which appear relatively most frequently, within the one or more packet header fields utilized by the one or more Rules of the Access Control List.

30. (Original) The system of Claim 29, wherein said means for defining one or more pointers of the Hash-Table-Balancing Bit Selection Vector to point to one or more bit positions in one or more packet header fields utilized by one or more rules of the Access Control List further includes:

means for defining the one or more pointers of the Hash-Table-Balancing Bit Selection Vector to point to one or more bit positions, whose contents have relatively equal variation between logical one and logical zero, within the one or more packet header fields utilized by the one or more Rules of the Access Control List.

31. (Currently Amended) The system of Claim 16, further comprising:  
signal bearing media bearing

said means for receiving at least one packet, and

said means for disposing of the received at least one packet in response to a walk of ~~the a Balanced Hash Table of Access Control List Binary Comparison Trees, the Table encoding an Access Control List.~~

32. (Original) The system of Claim 31, wherein said signal bearing media further includes:

recordable media.

33. (Original) The system of Claim 31, wherein said signal bearing media further includes:

transmission media.

34. (Original) The system of Claim 16, wherein the system further includes:  
a network station.

35. (Currently Amended) A program product comprising:  
signal bearing media bearing

means for receiving at least one packet, and

means for disposing of the received at least one packet in response to a walk of a

Hash Table, wherein

the Hash Table is balanced,

the Hash Table is configured to store Binary Comparison Trees, and



the Hash Table is configured to encode an Access Control List ~~Balanced Hash Table of Access Control List Binary Comparison Trees, the Table encoding an Access Control List.~~

36. (Original) The program product of Claim 35, wherein said signal bearing media further includes:  
recordable media.

37. (Original) The program product of Claim 35, wherein said signal bearing media further includes:  
transmission media.

38. (Currently Amended) The program product of Claim 35, wherein said means for disposing of the received at least one packet in response to a walk of a ~~Balanced Hash Table of Access Control List Binary Comparison Trees, the Table encoding an Access Control List~~ further includes:

means for constructing a hash table index value from one or more bit positions, within the received at least one packet, pointed at by one or more pointers of a Hash-Table-Balancing Bit Selection Vector; and  
means for walking a binary comparison tree associated with the constructed hash table index value.

39. (Currently Amended) The program product of Claim 35, wherein said signal bearing media bears further comprising:

means for converting the Access Control List to the ~~Balanced Hash Table of Access Control List Binary Comparison Trees, the Table encoding the Access Control List.~~

40. (Currently Amended) The program product of Claim 39, wherein said means for converting the Access Control List to the ~~Balanced Hash Table of Access Control List Binary Comparison Trees, the Table encoding the Access Control List~~ further includes:

means for creating a binary comparison tree for at least one Access Control List rule in the Access Control List.

41. (Original) The program product of Claim 40, wherein said means for creating a binary comparison tree for at least one Access Control List rule further includes:

means for creating at least one node, having at least one miss branch and at least one match branch, for at least one packet header field utilized by the at least one Access Control List rule in the Access Control List.

42. (Currently Amended) The program product of Claim 39, wherein said means for converting the Access Control List to the ~~Balanced Hash Table of Access Control List Binary Comparison Trees, the Table encoding the Access Control List~~ further includes:

means for inserting at least a part of a binary comparison tree constructed for at least one Access Control List rule into a hash table entry pointed at by a hash table index.

43. (Original) The program product of Claim 42, wherein said means for inserting at least a part of a binary comparison tree constructed for at least one Access Control List rule into a hash table entry pointed at by a hash table index further includes:

means for generating a hash table index value for the at least one Access Control List rule; and

means for inserting the at least a part of a binary comparison tree constructed for at least one Access Control List rule into a hash table entry pointed at by a hash table index which is equal to the generated hash table index value.

44. (Original) The program product of Claim 43, wherein said means for inserting the at least a part of a binary comparison tree constructed for at least one Access Control List rule into a hash table entry pointed at by a hash table index which is equal to the generated hash table index value further includes:

means for inserting, in its entirety, the binary comparison tree constructed for the at least one Access Control List Rule into the hash table entry pointed at by the hash table index in response to a determination that no pre-existing binary comparison tree is resident within the hash table entry.

45. (Original) The program product of Claim 43, wherein said means for inserting the at least a part of a binary comparison tree constructed for at least one Access Control List rule into a hash table entry pointed at by a hash table index which is equal to the generated hash table index value further includes:

means for inserting at least one node of the binary comparison tree constructed for the at least one Access Control List rule into the hash table entry pointed at by the hash table index in response to a determination that a pre-existing binary comparison tree is resident within the hash table entry.

46. (Original) The program product of Claim 43, wherein said means for generating a hash table index value for the at least one Access Control List rule further includes:

means for constructing the hash table index value from the contents of one or more packet headers utilized by the at least one Access Control List rule in the Access Control List.

47. (Original) The program product of Claim 46, wherein said means for constructing the hash table index value from the contents of one or more packet headers utilized by the at least one Access Control List rule in the Access Control List further includes:

means for constructing the hash table index value from the contents of the one or more packet header bit positions pointed at by one or more pointers of a Hash-Table-Balancing Bit Selection Vector.

48. (Original) The program product of Claim 47, wherein said means for constructing the hash table index value from the contents of the one or more packet header bit positions pointed at by one or more pointers of a Hash-Table-Balancing Bit Selection Vector further includes:

means for constructing the Hash-Table-Balancing Bit Selection Vector.

49. (Original) The program product of Claim 48, wherein said means for constructing the Hash-Table-Balancing Bit Selection Vector further includes:

means for defining one or more pointers of the Hash-Table-Balancing Bit Selection Vector to point to one or more bit positions in one or more packet header fields utilized by one or more rules of the Access Control List.

50. (Original) The program product of Claim 49, wherein said means for defining one or more pointers of the Hash-Table-Balancing Bit Selection Vector to point to one or more bit positions in one or more packet header fields utilized by one or more rules of the Access Control List further includes:

means for defining the one or more pointers of the Hash-Table-Balancing Bit Selection Vector to point to one or more bit positions, which appear relatively most frequently, within the one or more packet header fields utilized by the one or more Rules of the Access Control List.

51. (Original) The program product of Claim 50, wherein said means for defining one or more pointers of the Hash-Table-Balancing Bit Selection Vector to point to one or more bit positions in one or more packet header fields utilized by one or more rules of the Access Control List further includes:

means for defining the one or more pointers of the Hash-Table-Balancing Bit Selection Vector to point to one or more bit positions, whose contents have relatively equal variation between logical one and logical zero, within the one or more packet header fields utilized by the one or more Rules of the Access Control List.

52. (New) A network station comprising:

a per-packet processing engine; and

a hash table, wherein

the hash table is balanced,

the hash table is configured to store binary comparison trees,

the hash table is configured to encode an access control list, and

the per-packet processing engine is configured to walk the hash table, in response to the network station receiving a packet, and

the walk of the hash table identifies a disposition of the packet, according to the access control list encoded in the hash table.

53. (New) The network station of Claim 52, wherein the per-packet processing engine is configured to:

construct a hash table index value from one or more bit positions, within the packet,  
pointed at by one or more pointers of a hash-table-balancing bit selection vector;  
and  
walk a binary comparison tree, stored in the hash table, associated with the constructed  
hash table index value.

54. (New) The network station of Claim 52, further comprising:  
program instructions executable to convert the access control list to the hash table.

55. (New) The network station of Claim 54, wherein the program instructions are is  
further executable to:

create a binary comparison tree for at least one access control List rule in the Access  
Control List.

56. (New) The network station of Claim 54, wherein the program instructions are  
further executable to:

insert at least a part of a binary comparison tree constructed for at least one access control  
list rule into a hash table entry pointed at by a hash table index.

57. (New) The network station of Claim 56, wherein inserting at least a part of a  
binary comparison tree constructed for at least one access control list rule into a hash table entry  
pointed at by a hash table index includes:

generating a hash table index value for the at least one access control list rule; and  
inserting the at least a part of a binary comparison tree constructed for at least one access  
control list rule into a hash table entry pointed at by a hash table index which is  
equal to the generated hash table index value.

58. (New) The network station of Claim 57, wherein inserting the at least a part of a  
binary comparison tree constructed for at least one access control list rule into a hash table entry  
pointed at by a hash table index which is equal to the generated hash table index value includes:

inserting, in its entirety, the binary comparison tree constructed for the at least one access control list rule into the hash table entry pointed at by the hash table index in response to a determination that no pre-existing binary comparison tree is resident within the hash table entry.

59. (New) The network station of Claim 57, wherein inserting the at least a part of a binary comparison tree constructed for at least one access control list rule into a hash table entry pointed at by a hash table index which is equal to the generated hash table index value includes:

inserting at least one node of the binary comparison tree constructed for the at least one access control list rule into the hash table entry pointed at by the hash table index in response to a determination that a pre-existing binary comparison tree is resident within the hash table entry.

60. (New) The network station of Claim 57, wherein generating a hash table index value for the at least one access control list rule further includes:

constructing the hash table index value from the contents of one or more packet headers utilized by the at least one access control list rule in the access control list.

61. (New) The network station of Claim 60, wherein constructing the hash table index value from the contents of one or more packet headers utilized by the at least one access control list rule in the access control list includes:

constructing the hash table index value from the contents of the one or more packet header bit positions pointed at by one or more pointers of a hash-table-balancing bit selection vector.

62. (New) The network station of Claim 62, wherein said constructing the hash table index value from the contents of the one or more packet header bit positions pointed at by one or more pointers of a hash-table-balancing bit selection vector includes:

defining one or more pointers of the hash-table-balancing bit selection vector to point to one or more bit positions in one or more packet header fields utilized by one or more rules of the access control list.

63. (New) The network station of Claim 62, wherein defining one or more pointers of the hash-table-balancing bit selection vector to point to one or more bit positions in one or more packet header fields utilized by one or more rules of the access control list includes:

defining the one or more pointers of the hash-table-balancing bit selection vector to point to one or more bit positions, which appear relatively most frequently, within the one or more packet header fields utilized by the one or more rules of the access control list.

64. (New) The network station of Claim 62, wherein defining one or more pointers of the hash-table-balancing bit selection vector to point to one or more bit positions in one or more packet header fields utilized by one or more rules of the access control list includes:

defining the one or more pointers of the hash-table-balancing bit selection vector to point to one or more bit positions, whose contents have relatively equal variation between logical one and logical zero, within the one or more packet header fields utilized by the one or more rules of the access control list.